

NAME:
BLOCK:

REPLACEMENT REACTIONS

- PURPOSE:**
- (1) To carry out a number of chemical reactions
 - (2) To distinguish the difference between single and double replacement reactions
 - (3) To practice writing balanced chemical equations

MATERIALS:

APPARATUS

1 microplate
stirring rod
safety goggles
tweezers

REAGENTS

- (a) Cobalt (II) chloride solution
- (b) Sodium sulphide solution
- (c) Potassium iodide solution
- (d) Lead (II) nitrate solution
- (e) Potassium sulphate solution
- (f) Barium chloride solution
- (g) Silver nitrate solution
- (h) 3 - 4 Copper pieces
- (i) Hydrochloric acid
- (j) Magnesium strip (1 cm)

PROCEDURE:

WARNING... *Wear safety goggles at ALL times!*

1. Label ten microwells (a - j)
2. Pour about 10 drops of each solution into the appropriate microwell.
3. Place 3-4 pieces of copper into the appropriate microwell (h)
4. Place 1 strip of magnesium into the appropriate microwell (j)
5. Describe the initial appearance of the reactants in each microwell in the data table. Be very specific!!!

6. Pour 10 drops of Sodium sulphide solution into the microwell containing Cobalt (II) chloride solution. Record your observations. The products are Cobalt (II) sulphide and Sodium chloride.
7. Pour 10 drops of Lead (II) nitrate solution into the microwell containing Potassium iodide solution. Record your observations. The products are Potassium nitrate and Lead (II) iodide.
8. Pour 10 drops of Barium chloride solution into the microwell containing Potassium sulphate solution. Record your observations. The products are Potassium chloride and barium sulphate.
9. Using tweezers, place the copper pieces into the microwell containing silver nitrate solution. Let the reaction occur for at least 10 minutes. Stir periodically with a glass stirring rod. Record your observations. The products are Silver and Copper (II) nitrate.
10. Using tweezers, place the strip of Magnesium into the microwell containing Hydrochloric acid. Record your observations. The products are Hydrogen gas and Magnesium chloride.
11. CLEAN-UP:
 - (1) Using tweezers, place any leftover copper or magnesium in the garbage
 - (1) All wastes can be disposed down the sink with lots of water.
 - (2) Wash and Dry all apparatus
 - (3) Return ALL apparatus and reactants to the supply table
 - (4) Wash and Dry your lab station.

OBSERVATIONS: Record ALL observations in the data table (provided)

DISCUSSION:

1. Write a balanced chemical equation for, and classify (Single or Double Replacement) each reaction.

(A)

TYPE OF REACTION = _____

(B)

TYPE OF REACTION = _____

(C)

TYPE OF REACTION = _____

(D)

TYPE OF REACTION = _____

(F)

TYPE OF REACTION = _____

2. In each double replacement reaction, a precipitate was formed (Cobalt (II) sulphide, Lead (II) iodide, and Barium sulphate).

(a) What do you think a precipitate is?

(b) Why can't you see the other product of each reaction?

3. Hydrogen gas is produced by the reaction between Magnesium and Hydrochloric acid. What could you do to determine in the gas produced was actually hydrogen gas?

CONCLUSION: (Describe 2 things that you learned by completing this lab?)

Table 1. Observations of single and double replacement reactions.

Reaction	Name of reactants	Description of reactants	Description of reaction and products
A	a		
	b		
B	c		
	d		
C	e		
	f		
D	g		
	h		
E	i		
	j		